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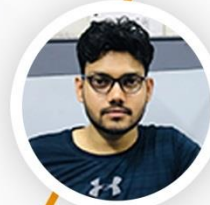
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# Maths Inequalities Questions for Bank and Insurance Exams

## Maths inequalities Quiz 2

Directions: Each question below contains a statement followed by Quantity I and Quantity II. You have to study the information along with the question and compare the value derived from Quantity I and Quantity II, then answer:

1. **Quantity I:** Speed of boat in still water, if a man can travel 54 km downstream in 9 hours and 40 km upstream in 10 hours.  
**Quantity II:** Speed of boat in still water, if a man can travel 45 km downstream in 9 hours and the speed of stream is 1 kmph.

A. Quantity I  $\leq$  Quantity II      B. Quantity I  $\geq$  Quantity II      C. Quantity I  $>$  Quantity II  
D. Quantity I  $<$  Quantity II      E. Quantity I = Quantity II

2. **Quantity I:** Age of mother, if the age of Smiti is  $\frac{1}{7}$ th of her mother's age and after 5 years Smiti's age will be 12 years.  
**Quantity II:** Age of mother, if the ratio of the ages of Sukriti and her mother is 3 : 7 and after 3 years the ratio of their ages will be 6 : 13.

A. Quantity I  $\leq$  Quantity II      B. Quantity I  $\geq$  Quantity II      C. Quantity I  $>$  Quantity II  
D. Quantity I  $<$  Quantity II      E. Quantity I = Quantity II

3. **Quantity I:** A bag contains 3 green, 2 yellow and 3 purple balls. Two balls are drawn at random, what is the probability that no ball is purple.

**Quantity II:**  $(7x - 8)(14x - 5) = 0$

A. Quantity I  $\leq$  Quantity II      B. Quantity I  $>$  Quantity II      C. Quantity I = Quantity II  
D. Quantity I  $<$  Quantity II      E. Quantity I  $\geq$  Quantity II

4. **What is the area of the rectangle?**

**Quantity I:** The area of the rectangle is equal to the area of the square whose side is 24 cm.

**Quantity II:** The perimeter of the rectangle is 88cm, if the ratio of the length and the breadth of the rectangle is 6 : 5.

A. Quantity I = Quantity II      B. Quantity I  $<$  Quantity II      C. Quantity I  $\leq$  Quantity II  
D. Quantity I  $\geq$  Quantity II      E. Quantity I  $>$  Quantity II

5. Anuj can do the half of the work in 12 days and Manoj can do the whole work in 30 days.

**Quantity I:** In how many days will Anuj and Manoj do the whole work?

**Quantity II:** If Anuj starts the work and works for 4 days, after that Manoj join him, in how many days will the whole work be completed?

A. Quantity I  $\leq$  Quantity II  
D. Quantity I  $<$  Quantity II

B. Quantity I  $\geq$  Quantity II  
E. Quantity I = Quantity II

C. Quantity I  $>$  Quantity II

6. **Quantity I :** Selling price, if cost price is Rs. 50,000 and profit is 20%

**Quantity II :** Selling price, if cost price is Rs. 50,000 and shopkeeper gained  $\frac{50}{3}$  % after giving discount of 25%

A. Quantity : I  $>$  Quantity : II  
D. Quantity : II  $\geq$  Quantity : I

B. Quantity : I  $\geq$  Quantity : II  
E. Quantity I = Quantity II or relation cannot be established

C. Quantity : II  $>$  Quantity : I

7. **Quantity I :** A boat goes from point P to Q downstream having a distance 120m and comeback to point T which is in the middle of P and Q in 6 secs then what is the speed of boat (Kph) if the speed of stream is 10m/s?

**Quantity II :** The ages of Ajinkya and Rahane 5 years ago in the ratio 3:2 and after 15 years ratio of ages of Ajinkya to Rahane is 17:13, then what is the sum of the ages in years of Ajinkya and Rahane 9 years from now?

A. Quantity : I  $>$  Quantity : II  
D. Quantity : II  $\geq$  Quantity : I

B. Quantity : I  $\geq$  Quantity : II  
E. Quantity I = Quantity II or relation cannot be established

C. Quantity : I  $<$  Quantity : II

8. **Quantity I :** 5 years ago, the ratio of Seema and Meera's age was 8 : 5. Two years hence, the ratio of their ages will becomes 5 : 4 Find the present age of Meera.

**Quantity II :** The age of son is half the age of mother. His sister's age is 20 years. Age of the mother is twice the age of his sister. Find the age of the son.

A. Quantity : I  $>$  Quantity : II  
D. Quantity : II  $\geq$  Quantity : I

B. Quantity : I  $\geq$  Quantity : II  
E. Quantity I = Quantity II or relation cannot be established

C. Quantity : I  $<$  Quantity : II

9. A box contains 7 Blue balls, 4 Green balls, 5 Grey balls and 9 White balls.

**Quantity I :** If two balls are drawn at random the probability that both the balls are either Grey or Green

**Quantity II :** If four balls are drawn at random the probability that all are of different colours

A. Quantity : I  $>$  Quantity : II

B. Quantity : I  $\geq$  Quantity : II

C. Quantity : I  $<$  Quantity : II

D. Quantity : II  $\geq$  Quantity : I

E. Quantity I = Quantity II or relation cannot be established

**10. A box contains 6 pink balls, 5 blue balls, 3 green balls and 6 yellow balls.**

**Quantity I :** If three balls are drawn at random then the probability that all the balls are either blue or yellow.

**Quantity II :** If three balls are drawn at random then the probability that all are of different colours.

A. Quantity : I  $>$  Quantity : II

B. Quantity : I  $\geq$  Quantity : II

C. Quantity : I  $<$  Quantity : II

D. Quantity : II  $\geq$  Quantity : I

E. Quantity I = Quantity II or relation cannot be established



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**Correct Answers:**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
C	E	A	E	D	A	C	E	C	C

**Explanations:**

**1. Quantity I:**

Let speed of boat = x kmph, speed of stream = y kmph

upstream speed = x – y, downstream speed = x + y

$$x + y = \frac{54}{9}$$

$$x + y = 6 \dots 1$$

$$x - y = \frac{40}{10}$$

$$x - y = 4 \dots 2$$

equation 1 + equation 2

$$x = 5$$

speed of boat = 5 kmph

**Quantity II:**

Let speed of boat = x kmph, speed of stream = 1 kmph

downstream speed = x + 1

$$\frac{45}{9} = x + 1$$

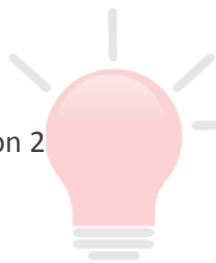
$$5 - 1 = x$$

$$x = 4$$

Speed of boat = 4 kmph

Quantity I > Quantity II

Hence, option C is correct.



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**2. Quantity I:**

Smiti's age after 5 years = 12 years

Present age of Smiti = 7 years

$$\frac{\text{Mother's age}}{7} = \text{Smiti's age}$$

Mother's age =  $7 \times 7 = 49$  years

**Quantity II:** Let Sukriti's age =  $3x$ , Mother's age =  $7x$

According to the statement,

$$3x + 3 : 7x + 3 = 6 : 13$$

$$13(3x + 3) = 6(7x + 3)$$

$$39x + 39 = 42x + 18$$

$$39 - 18 = 42x - 39x$$

$$21 = 3x$$

$$x = 7$$

Mother's age =  $7 \times 7 = 49$  years

Quantity I = Quantity II

Hence, option E is correct.



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**3. Quantity I:**

Favourable outcomes =  ${}^5C_2 = 10$

Total outcomes =  ${}^8C_2 = 28$

$$\text{Probability} = \frac{10}{28} = \frac{5}{14}$$

**Quantity II:**

$$(7x - 8)(14x - 5) = 0$$

$$7x - 8 = 0, 14x - 5 = 0$$

$$x = \frac{8}{7}, \frac{5}{14}$$

Quantity I  $\leq$  Quantity II

Hence, option A is correct.

**4. Quantity I:**

$$\begin{aligned} \text{Area of the square} &= 24 \times 24 \\ &= 576 \text{ cm}^2 \end{aligned}$$

Area of the square = Area of the rectangle

$$\text{Area of the rectangle} = 576 \text{ cm}^2$$

**Quantity II:**

Length of the rectangle =  $6x$ , Breadth =  $5x$

$$\text{Perimeter} = 88$$

$$2(l + b) = 88$$

$$6x + 5x = 44$$

$$11x = 44$$

$$x = 4$$

Length = 24cm, breadth = 20cm

$$\begin{aligned} \text{Area of the rectangle} &= 24 \times 20 \\ &= 480 \text{ cm}^2 \end{aligned}$$

Quantity I > Quantity II

Hence, option E is correct.

**5.** Anuj can do the half in 12 days so he can do the whole work in 24 days. Manoj can do the whole work in 30 days.

**Quantity I:**

$$\begin{aligned} \text{Anuj and Manoj can do the whole work together} &= \frac{1}{\frac{1}{24} + \frac{1}{30}} \\ &= \frac{1}{\frac{5+4}{120}} \\ &= \frac{120}{9} = \frac{40}{3} \text{ days} \end{aligned}$$

**Quantity II:**

$$\text{Anuj's 1 day work} = \frac{1}{24}$$

$$\text{Anuj's 4 day work} = \frac{4}{24} = \frac{1}{6}$$

$$\text{Remaining work} = 1 - \frac{1}{6} = \frac{5}{6}$$

Anuj and Manoj can do the remaining work,

$$\begin{aligned} &= \frac{\frac{5}{6}}{\frac{1}{24} + \frac{1}{30}} \end{aligned}$$

$$\frac{5}{\frac{6}{\frac{9}{120}}}$$

$$= \frac{100}{9} \text{ days}$$

$$\text{Total time} = \frac{100}{9} + 4 = \frac{136}{9}$$

Quantity I < Quantity II  
Hence, option D is correct

**6. Quantity I :**

$$SP = \frac{120}{100} \times 50000 = \text{Rs. } 60000$$

**Quantity II :**

$$\text{Discount} = 25\% = \frac{1}{4} \text{ (MP} = 4, \text{ SP} = 4 - 1 = 3)$$

$$\text{Gain} = \frac{50}{3}\% = \frac{1}{6} \text{ (CP} = 6, \text{ SP} = 6 + 1 = 7)$$

Make SP same

CP.....SP.....MP

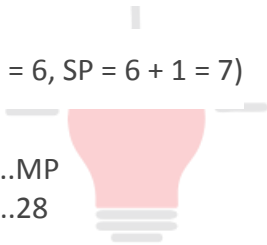
18.....21.....28

18 = 50000

So 21 = Rs. 58333.33

Hence, Quantity I > Quantity II

Therefore, option (A) is correct.



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**7. Total no of balls = 6 + 5 + 3 + 6 = 20**

**Quantity I :**

$$n(S) = 20C_3$$

$$n(E) = 5C_3 + 6C_3$$

$$P(E) = \frac{5C_3 + 6C_3}{20C_3} = \frac{30}{1140} = \frac{3}{114}$$

**Quantity II :**

$$n(S) = 20C_3 = 1140$$

$$n(E) = 6C_1 \times 5C_1 \times 3C_1 + 5C_1 \times 3C_1 \times 6C_1 + 3C_1 \times 6C_1 \times 6C_1 + 6C_1 \times 5C_1 \times 6C_1$$

$$n(E) = 6 \times 5 \times 3 + 5 \times 3 \times 6 + 3 \times 6 \times 6 + 6 \times 5 \times 6$$

$$n(E) = 90 + 90 + 108 + 180 = 468$$

$$P(E) = \frac{468}{1140}$$

Quantity II > Quantity I

Hence, option (C) is correct.



**8. Quantity I :**

Let the speed of boat be  $y$  m/sec.

Then,

Upstream speed =  $(y - 10)$  m/sec

Downstream speed =  $(y + 10)$  m/sec

Thus,

$$\frac{120}{y + 10} + \frac{60}{y - 10} = 6$$

$$6y^2 - 180y = 0$$

$$6y(y - 30) = 0$$

$$y = 0, y = 30$$

Therefore, the speed of the boat is 30m/sec.

$$\text{Required speed} = 30 \times \frac{18}{5} = 108 \text{ kmph}$$

**Quantity II :**

Let ages of Ajinkya and Rahane 5 years ago be  $3y, 2y$

$$\text{Then, } \frac{3y + 20}{2y + 20} = \frac{17}{13}$$

$$\text{or, } 39y + 260 = 34y + 340$$

$$\text{or, } 5y = 80$$

$$\text{or, } y = 16$$

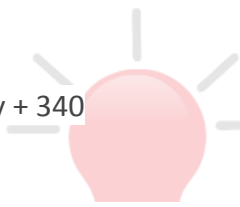
$$\text{Present age of Ajinkya} = (3 \times 16) + 5 = 53$$

$$\text{Present age of Rahane} = (2 \times 16) + 5 = 37$$

$$\text{Sum of their ages after 9 years from now} = (53 + 9) + (37 + 9) = 108 \text{ years}$$

Here, Quantity I = Quantity II.

Hence, option (E) is correct.



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**9. Quantity : I**

Let the present ages of Seema and Meena are  $s$  and  $m$  respectively.

Now,

$$\frac{s - 5}{m - 5} = \frac{8}{5}$$

$$\Rightarrow 8m - 40 = 5s - 25$$

$$\Rightarrow \frac{8m - 15}{5} = s \dots\dots(i)$$

And,

$$\frac{s + 2}{m + 2} = \frac{5}{4}$$

$$\Rightarrow 5m + 10 = 4s + 8$$

$$\Rightarrow s = \frac{5m + 2}{4} \dots\dots(ii)$$

equating (i) and (ii), we get

$$\frac{8m - 15}{5} = \frac{5m + 2}{4}$$

$\Rightarrow m = 10$  Hence, the present age of Meera is 10 years.

**Quantity : II**

Let, the present ages of Son, mother and sister are s, m and sis. Now,  $2s = m$  .....(i) And, sis = 20 years .....(ii)  $m = 2$  sis .....(iii) Using equation (ii) and (iii), we can say that  $m = 40$  years .....(iv) Using (iv) and (i), we can say that  $s = 20$  years. Here, Quantity: I < Quantity II

Hence, option (C) is correct.

**10. Quantity : I**

Total number of way in which two balls can be drawn

$$n(s) = {}^{25}C_2 = \frac{25 \times 24}{2} = 300$$

Total number of ways in which both the balls drawn are either Grey or Green  $n(E) = {}^4C_2 + {}^5C_2 = 6 + 10$   $n(E) = 16$   
Probability the both the balls are either Grey or Green

$$n(P) = \frac{n(E)}{n(S)} = \frac{16}{300}$$

**Quantity : II** Total number of ways in which four ball can be drawn

$$n(S) = {}^{25}C_4 = \frac{25 \times 24 \times 23 \times 22}{4 \times 3 \times 2 \times 1}$$

$$n(S) = 12,650$$

Total number of ways in which all the balls are of different colour.

$$n(E) = {}^7C_1 \times {}^4C_1 \times {}^5C_1 \times {}^9C_1 = 7 \times 4 \times 5 \times 9$$

$$n(E) = 1260$$

Probability that both the balls are of different colour

$$n(P) = \frac{n(E)}{n(S)} = \frac{1260}{12650}$$

$$n(P) = \frac{126}{1265}$$

Here, Quantity : I < Quantity : II

Hence, option (C) is correct.



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